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Septoria Leaf and Glume Blotch of Wheat

FarmFacts

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The Fungus

Three species of the *Septoria* fungus are capable of infecting wheat in Saskatchewan. *Septoria avenae* causes a leaf blotch, but is not considered to cause significant damage. *Septoria tritici* and *Septoria nodorum* cause a more damaging leaf blotch, and *S. nodorum* also commonly infects the glumes and nodes.

Importance

The septoria complex is becoming more prevalent, and is now widespread in Saskatchewan. Losses have tended to be higher in northern Saskatchewan, but the disease is also causing problems in southern Saskatchewan wherever weather conditions are favorable.

Good data on yield reductions due to septoria are lacking for Saskatchewan. In the United States and Europe losses of 10-20% are often reported. The Maritime provinces have suffered losses of up to 30%. In severe outbreaks losses have ranged from 40% to near crop failure in other parts of the world. For Saskatchewan, annual losses would rarely exceed 5-10%, however, individual fields may suffer more serious losses depending on weather conditions and cropping practices. Losses are greatest when epidemics develop before heading, and occur as a result of lost photosynthetic tissue. Thus disease on the flag leaf and glumes is most serious. The disease reduces seed set and seed filling often resulting in shrivelled grain.

While wheat is the principle host, the 3 septoria species are also weakly virulent on barley, rye and some grasses. Damage to these other hosts is usually minimal.

Symptoms

Septoria tritici (speckled leaf blotch) usually begins as chlorotic flecks on lower leaves. The flecks expand into elongated lesions, up to 15 mm long, which tend to have parallel sides. Dark, conspicuous pycnidia form inside the lesions, which may exude milky white colored spore masses under wet conditions.

S. nororum and *S. avenae* leaf spots tend to be more lens shaped, and are less restricted by veins. Lesions are initially water soaked, then become dry, yellow and finally brown, often with grey-brown centres. Leaf necrosis may extend far beyond the lesions due to the action of fungal toxins.

S. norodum and *S. avenae* lesions also develop pycnidia, but they are less conspicuous than those of *S. tritici*, and exude pinkish colored spores.
S. norodum glume infections (glume blotch) often begins at the tips and spreads downwards, forming purplish-brown to grey lesions. Dark pycnidia also eventually form on the glumes, but they can be difficult to see without the aid of a magnifying lens.

Disease Cycle

The fungus overwinters on infected stubble, straw, leaves of winter wheat and seed. Undisturbed wheat stubble supports spore production for up to 3 years.

Seed infection by *S. nodorum* is possible, and the disease may be transmitted to seedlings via infected seed.

Seed infection is not considered to be extremely important in Saskatchewan, especially in comparison to the massive number of spores produced on stubble, however it may play a small factor.

Most initial infections in the spring are caused by spores produced on infected wheat stubble or straw. Spore bearing pycnidia are produced abundantly in infected leaf or glume tissue under moist conditions. Spores are spread mainly by splashing rain and to a lesser extent by wind. Wet, windy weather favors disease outbreaks. *S. nodorum* is favored by 20 - 27°C temperatures, while *S. tritici* prefers 15 - 20°C. Infections of leaves by spores requires at least 6 hours of leaf wetness and possibly up to 16 hours for *S. nodorum*. Thus dry weather may arrest disease spread.

Control

1. Rotate with crops other than wheat. This will allow infected stubble and straw to break down, and will lower disease levels in subsequent wheat crops considerably.

2. If a rotation is not possible, the next best thing is to turn under wheat straw and stubble.

3. No varieties have good resistance to septoria however, the variety Bluesky has an intermediate level of resistance.

4. Some fungicides which have been registered on a year to year basis since 1986 are labelled for control of septoria on wheat. Most are intended for use by growers who practice intensive cereal management techniques for high yield and quality. Refer to current provincial recommendations.

5. Use disease-free seed. Seed from a field which had severe glume blotch may be carrying the fungus.

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